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Comprehensive Maritime Awareness (CMA) Joint Capabilities Technology Demonstration (JCTD)

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Background: The Comprehensive Maritime Awareness (CMA) Joint Capabilities Technology Demonstration (JCTD) is a program to improve Maritime Domain Awareness (MDA). The CMA JCTD vision is to share maritime shipping information throughout the world to deter use of commercial maritime shipping for terrorism, WMD proliferation, drugs, piracy, and human trafficking. CMA serves as an exemplar for a “culture of sharing” of maritime information between the U.S. and international partners. The project takes advantage of ongoing efforts, proven technologies, and current information-sharing agreements. CMA has two main focus areas: 1) demonstrate the importance of interagency and international information-sharing for improved maritime awareness; and 2) demonstrate improved information management techniques — such as application of the U.S. Department of Defense Net-Centric Data Strategy — to enable effective management of large volumes of shared data. CMA is working cooperatively with the Republic of Singapore. Singapore’s position as a nexus for shipping in South-east Asia provides a unique opportunity for sharing information.

Problem to be Addressed: Effective homeland defense relies on ensuring air and maritime shipping is not used to transport WMD, other terrorist mechanisms, or terrorists. Resource limitations force the U.S. to inspect and interdict only a fraction of all maritime shipping due to the high volume of shipping coming into U.S. ports and the economic requirements to maintain rapid flow of goods. This is a global problem, shared by our international friends and allies.

U.S. and international information resources — some unclassified, some classified — help to focus inspection assets on the most probable threats. Much of the available information is exploitable, but only through painstaking correlation approaches that can require hours of an analyst’s time for a single vessel. Also, much of the information developed by the U.S. and the international community is not shared. The current labor-intensive processes and lack of sharing create inefficiencies and missed opportunities to address threats as early as possible, prior to threats entering our ports. See Fig. 4.

Serious gaps exist in identifying and prioritizing worldwide maritime threats:

- Maritime forces lack the tools to provide timely and accurate maritime situational awareness.
- Automatic tools to identify and prioritize relevant and actionable information are lacking.
- The inability to acquire, fuse, and manage disparate information limits timely cueing and focus.
- Information-sharing barriers (technical, cultural) limit the effectiveness of partner entities.

Proposed Solution: CMA addresses the problems listed above by developing a culture of sharing between international partners and the U.S., and between U.S. agencies. See Fig. 5. CMA’s goals are to (1) track maritime movements, to include vessels, people, and cargo; (2) identify which movements are potential threats; and (3) prioritize them for action. This will improve maritime security by acquiring, integrating, and exchanging relevant maritime activity information, identifying possible threats using available information, and then focusing limited interdiction and inspection assets on the most probable threats.

Draw information from multiple sources: The U.S. is not alone in desiring to obtain a more complete maritime picture. Many of our friends rely on maritime shipping for their existence. Information is to be obtained from multiple sources, including a Common Operational Picture (COP), Automated Information Systems (AIS), Department of Defense systems, Department of Commerce databases, and Department of Homeland Security information. Singapore’s sources of information may include Port Authority information, Singapore AIS information (to include Singapore’s AIS-like system for 100% of its maritime traffic), and others.

Correlate multi-source information to maritime contacts: Adding more sources of information will overwhelm maritime security forces and analysts searching for threats unless the sources of information can be correlated. CMA automates this effort to reduce the workload for maritime analysts.

Identify Anomalies and Threats: Once disparate sources of information are correlated and fused, the information is used to identify anomalies and threats. Identification of anomalies might be as simple as automatically finding discrepancies between various data sources. For instance, as a ship approaches Long Beach, its AIS indicates the ship name is the Tokyo Maru. However, the automated tool searches databases and shows the Tokyo Maru was seen in Rotterdam one day earlier. The track would be flagged automatically. Another case could be a ship approaching Long Beach with an Advanced Notice of Arrival indicating crew

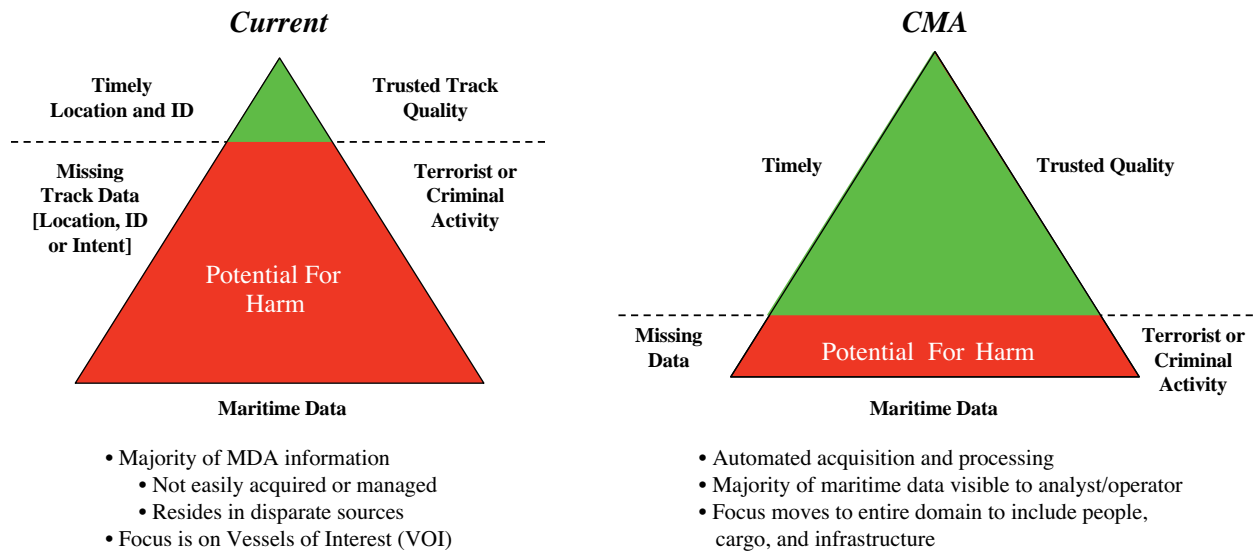


FIGURE 4
Knowledge level: current and CMA.

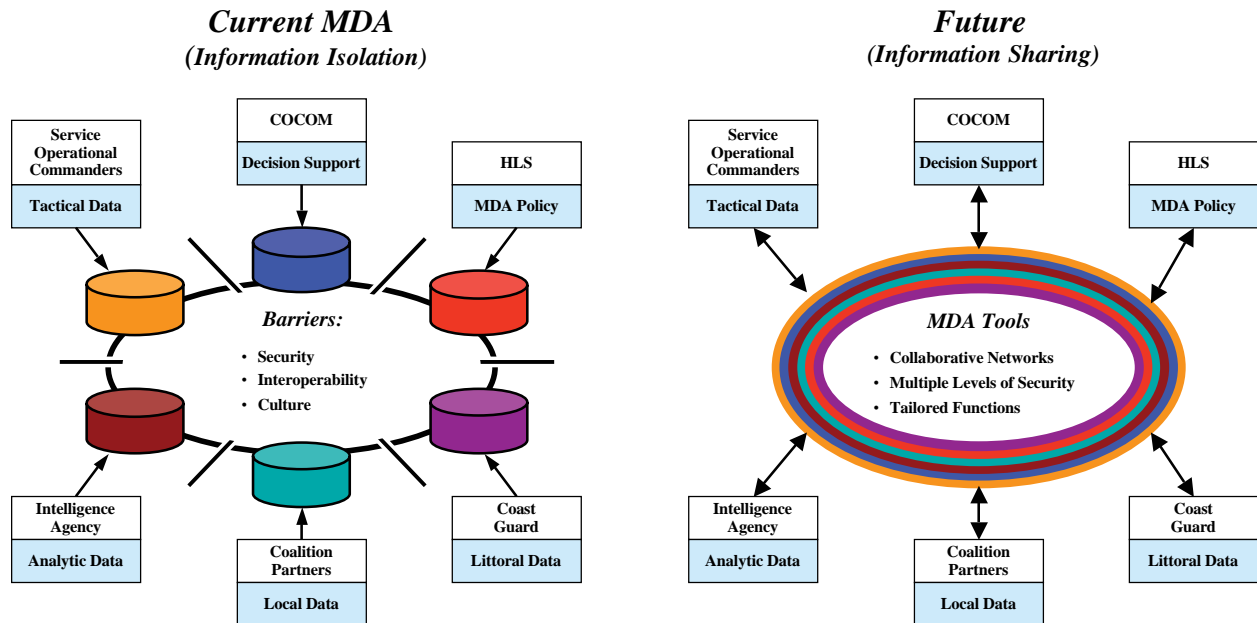


FIGURE 5
Reducing technical/cultural barriers. Policy modifications are necessary to allow information flow across technical and geographic boundaries.

size of 34, when the last port of call in Singapore shows crew size of 30. An automated report would flag the ship for investigation.

Define and Demonstrate Sharing Practices and Policies: Because maritime threats are a concern to all maritime nations, sharing the identified anomalies and threats (within already established information-sharing restrictions) is critical. Circuits for sharing classified information are available on the Coalition Enterprise Regional Information Exchange System (CENTRIXS). In addition, automated security guards are used to ensure that only releasable information is exchanged, in accordance with existing disclosure policies.

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